


PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference BW329M		FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/IT2004/000224		International filing date (day/month/year) 20.04.2004		Priority date (day/month/year) 20.04.2004
International Patent Classification (IPC) or national classification and IPC B25C5/16				
Applicant ROMEO MEASTRI & FIGLI S.P.A. et al.				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 4 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau) a total of 3 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 10.03.2005		Date of completion of this report 03.06.2005		
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer B. Flodstroem Telephone No. +49 89 2399-8971		



INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITYInternational application No.
PCT/IT2004/000224

10/590746

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

2, 3	as originally filed
1, 4	received on 10.03.2005 with letter of 02.03.2005

Claims, Numbers

7 (part), 8-12	as originally filed
1-6, 7 (part)	received on 10.03.2005 with letter of 02.03.2005

Drawings, Sheets

1/3-3/3	as originally filed
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- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
 - ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
 4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
 - ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/T2004/000224

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-12
	No: Claims	
Inventive step (IS)	Yes: Claims	1-12
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-12
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. The application relates to a stapler according to the preamble of claim 1. Such a stapler is known from US 4556161 A (D1), from which claim 1 has been delimited.
2. Claim 1 differs from D1 in the characterizing features of the claim, in particular in that the mobile plate 7 can slide between a rest position and an operative position. In D1, no rest position is foreseen for the corresponding part, spacer 22. In stead, this spacer must be detached from the stapler in order to enable thicker staples or nails to be used.
3. This feature is neither known from nor rendered obvious by any of the cited prior art.
4. The subject-matter of claim 1 of the present application is therefore considered as being novel and involving an inventive step (Articles 33(2) and (3) PCT).
5. The dependent claims 2-12 also fulfil the requirements of Articles 33(2) and (3) PCT.

Re Item VII

Certain defects in the international application

1. According to the requirements of Rule 11.13(I) reference signs not appearing in the description shall not appear in the drawings, and vice versa. This requirement is not met in view of the reference signs 12 and 14.

STAPLER WITH ADAPTER

5 The present invention relates to a stapler with adapter, and in particular to a stapler which allows to adapt the ejection chamber of a stapler to the size and the shape of the staples and/or nails to be ejected.

10 EP-A-911120 discloses a stapler comprising a main body which includes a seat for a row of staples which are urged by a pusher toward an ejection head, in which a striker can run for pushing and ejecting from the ejection head the first staple of the row. Said stapler is provided with an adapter which can shift laterally in said seat for adapting the stapler to the width of the staples to be ejected.

However, said adapter does not allow to adapt the stapler also to the thickness, i.e. the depth, of the staples to be ejected, as well as to the use of nails with or without a head instead of the staples. [*]

15 It is therefore an object of the present invention to provide a stapler which is free from said disadvantages, i.e. a stapler which can be easily adapted to staples and/or nails having a variable size and shape. Said object is achieved with a stapler, the main features of which are disclosed in the first claim and other features are disclosed in the subsequent claims.

20 Thanks to its particular mobile plate, the stapler according to the present invention allows to employ staples and/or nails having a variable thickness. Furthermore, said mobile plate is preferably provided with a lateral notch with allows also the use of nails without head, which are contained laterally by the mobile plate for being correctly guided during their ejection.

25 According to a particular aspect of the invention, the mobile plate can run in a direction substantially parallel to the run direction of the striker and is connected to a slider arranged in the front portion of the main body of the stapler, so as to simplify its manufacture, working and use. Said slider preferably comprises a particular locking mechanism which prevents the accidental sliding of the mobile plate.

30 Furthermore, the striker and the mobile plate have particular sizes suitably studied for adapting the stapler according to the present invention to the majority of the staples and the nails available in the market.

[*]: US 4556161 discloses a stapler provided with a spacer for adapting staples with different thicknesses. However, for using thick staples this stapler must be opened and the spacer must be detached therefrom, so that the adaptation is relatively difficult and the spacer could be lost in the meanwhile.

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17, slider 8 cannot slide in the same guide 10. Expander 17 is provided with a pin 19 crossing an opening 20 made in the middle of slider 8, so that it can be moved by a user with respect to slider 8. Hole 21 for pin 9 which mechanically connects slider 8 to the mobile plate 7 is made in the rear wall of slider 8. Two flexible arms 22 which are made in a single piece, for example of plastic, with the body of expander 17 are provided with teeth 23 protruding from the sides of the same expander for penetrating into corresponding cavities 24 made at the sides of guide 18 of slider 8, so that expander 17 can be partially locked in its extreme lower and/or upper positions. Figures 10 to 12 and 13 to 15 show slider 8 with the flexible arms 15 in a retracted and expanded position.

The thickness of striker 6 is preferably lower than 0,8 mm, while its width is comprised between 10 and 12 mm. The thickness of the mobile plate 7 is preferably lower than 0,5 mm, while its width is comprised between 9 and 12 mm. With these sizes, it is possible to employ metal staples 3, 13 having a thickness comprised between 0,7 and 1,3 mm, or nails 12, 14 having a width comprised between 0,9 and 2,1 mm.

Obviously, the above described adjusting mechanism can be applied to the staplers with the anvil for clinching the metal staples, as well as to the staplers lacking in this member, which are also known with the name *tacker*.

Further modifications and/or additions may be made by those skilled in the art to the hereinabove described and illustrated embodiments of the invention, while remaining within the scope of the same invention **claim 1**.

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CLAIMS

1. Stapler comprising a main body (1) which includes a seat (2) for a row of staples (3, 13) and/or nails (12, 14) which are urged by a pusher (4) toward an ejection head (5), wherein a striker (6) can run in a direction substantially perpendicular to the feed direction of the row of staples (3, 13) and/or nails (12, 14) in the seat (2) for pushing and ejecting from the ejection head (5) the first staple (3, 13) and/or nail (12, 14) of the row, ~~characterized in that~~ a mobile plate (7) ~~is being~~ mechanically connected to a slider (8) which protrudes outside the main body (1), ~~so characterized in that by~~ moving the slider (8) the mobile plate (7) can slide in the main body (1) **from a rest position to an operative position** for being arranged between the ejection head (5) and the striker (6) when the latter pushes the first staple (3, 13) and/or nail (12, 14).

2. Stapler according to the previous claim, characterized in that the mobile plate (7) is mechanically connected to the slider (8) by means of a pin (9) housed in corresponding holes (21) made in the mobile plate (7) and in the slider (8).

3. Stapler according to one of the previous claims, characterized in that the mobile plate (7) can slide in a direction substantially parallel to the run direction of the striker (6).

4. Stapler according to one of the previous claims, characterized in that the main body (1) comprises two half-bodies (1a, 1b) which are mutually joined along a substantially vertical symmetry plane which crosses the striker (6) and the seat (2) for the staples (3, 13) and/or nails (12, 14), wherein the slider (8) can slide in a guide (10) made in the front wall of the half-bodies (1a, 1b).

5. Stapler according to ~~the previous claims 2 and 4~~, characterized in that the pin (9) connecting the mobile plate (7) to the slider (8) crosses an opening formed of two opposing notches made in the two half-bodies (1a, 1b) of the main body (1).

6. Stapler according to one of the previous claims, characterized in that the mobile plate (7) has a notch (11) along at least one side edge thereof, so that the width of the mobile plate (7) is smaller than the seat for the staples (3, 13) and/or nails (12, 14) in the ejection head (5).

7. Stapler according to one of the previous claims, characterized in that the

STAPLER WITH ADAPTER

The present invention relates to a stapler with adapter, and in particular to a stapler which allows to adapt the ejection chamber of a stapler to the size and the shape of the staples and/or nails to be ejected.

EP-A-911120 discloses a stapler comprising a main body which includes a seat for a row of staples which are urged by a pusher toward an ejection head, in which a striker can run for pushing and ejecting from the ejection head the first staple of the row. Said stapler is provided with an adapter which can shift laterally in said seat for adapting the stapler to the width of the staples to be ejected.

However, said adapter does not allow to adapt the stapler also to the thickness, i.e. the depth, of the staples to be ejected, as well as to the use of nails with or without a head instead of the staples. [*]

It is therefore an object of the present invention to provide a stapler which is free from said disadvantages, i.e. a stapler which can be easily adapted to staples and/or nails having a variable size and shape. Said object is achieved with a stapler, the main features of which are disclosed in the first claim and other features are disclosed in the subsequent claims.

Thanks to its particular mobile plate, the stapler according to the present invention allows to employ staples and/or nails having a variable thickness. Furthermore, said mobile plate is preferably provided with a lateral notch with allows also the use of nails without head, which are contained laterally by the mobile plate for being correctly guided during their ejection.

According to a particular aspect of the invention, the mobile plate can run in a direction substantially parallel to the run direction of the striker and is connected to a slider arranged in the front portion of the main body of the stapler, so as to simplify its manufacture, working and use. Said slider preferably comprises a particular locking mechanism which prevents the accidental sliding of the mobile plate.

Furthermore, the striker and the mobile plate have particular sizes suitably studied for adapting the stapler according to the present invention to the majority of the staples and the nails available in the market.

[*]: US 4556161 discloses a stapler provided with a spacer for adapting staples with different thicknesses. However, for using thick staples this stapler must be opened and the spacer must be detached therefrom, so that the adaptation is relatively difficult and the spacer could be lost in the meanwhile.

Further advantages and features of the stapler according to the present invention will become clear to those skilled in the art from the following detailed and non-limiting description of two embodiments thereof with reference to the attached drawings, wherein:

- 5 – figure 1 shows an exploded partial view of a stapler according to the first embodiment of the invention;
- figure 2 shows a partial sectioned lateral view of the stapler of figure 1;
- figure 3 shows a front view of the stapler of figure 1;
- figure 4 shows a first front view of a stapler according to the second embodiment of
10 the invention;
- figure 5 shows a first partial sectioned top view of the stapler of figure 4;
- figure 6 shows a second partial sectioned top view of the stapler of figure 4;
- figure 7 shows a second front view of the stapler of figure 4;
- figure 8 shows a third partial sectioned top view of the stapler of figure 4;
- 15 – figure 9 shows a fourth partial sectioned top view of the stapler of figure 4;
- figure 10 shows a first rear view of the slider of the stapler according to the present invention;
- figure 11 shows a view sectioned along plane XI-XI of the slider of figure 10;
- figure 12 shows a first front view of the slider of figure 10;
- 20 – figure 13 shows a second rear view of the slider of figure 10;
- figure 14 shows a view sectioned along plane XIV-XIV of the slider of figure 10;
- figure 15 shows a second front view of the slider of figure 10.

Referring to figures 1 to 3, it is seen that the stapler according to the first embodiment of the invention comprises in a known way a main body 1 which includes a
25 seat 2 for a row of metal staples 3 which are urged by a pusher 4 toward an ejection head 5. A striker 6 connected to a mechanic and/or electric driving mechanism (not shown in the figures) can run in a vertical direction (indicated with an arrow in figure 1) substantially perpendicular to the feed direction of the row of metal staples 3 in seat 2 for pushing downwards and ejecting from the ejection head 5 the first metal staple 3 of
30 the row.

According to the invention, a mobile plate 7 is mechanically connected to a slider

8 which protrudes outside the main body 1 so that by moving downwards slider 8 the mobile plate 7 can slide in the main body 1 in a direction substantially parallel to the run direction of striker 6 for being arranged (as illustrated in figures 2 and 3) between the ejection head 5 and the striker 6 when the latter pushes the metal staple 3 arranged in the ejection head 5. Therefore, when the mobile plate 7 is lowered, the first metal staples 3 hits against the mobile plate 7 instead of the front wall of the ejection head 5. In the present embodiment, the mobile plate 7 is mechanically connected to slider 8 by means of a pin 9 (indicated with a broken line in figure 3) housed in corresponding holes made in the mobile plate 7 and in slider 8.

The main body 1 preferably comprises two half-bodies 1a, 1b which are mutually joined along a substantially vertical symmetry plane which crosses striker 6 and seat 2. Slider 8 can slide in a guide 10 made in the front wall of half-bodies 1a, 1b, so that pin 9 crosses an opening formed of two opposing notches made in the two half-bodies 1a, 1b.

Referring to figures 4 to 9, it is seen that in a second embodiment of the invention, the mobile plate 7 is preferably shaped to obtain a notch 11 along at least one side edge thereof, so that the width of the mobile plate 7 is smaller than the seat for the metal staple 3 in the ejection head 5. Figures 4 to 6 show the mobile plate 7 lifted for employing metal staples 3 having a normal thickness or nails with head 12. Figures 7 to 9 show instead the mobile plate 7 lowered for employing metal staples 13 having a reduced thickness or nails without head 14. As it is clearly shown in figure 9, the nails without head 14 are located inside notch 11 and thus are laterally contained by the mobile plate 7.

Referring to figures 10 to 15, it is seen that slider 8 comprises a particular locking mechanism which includes two flexible arms 15 which are made in a single piece, for example of plastic, with the body of slider 8 and are provided with teeth 16 protruding from the sides of the same slider. An expander 17 can slide in a guide 18 made in the central body of slider 8 in a vertical direction equal to the sliding direction of slider 8 in guide 10 of the main body 1, so that expander 17, during its sliding from a position to the other in guide 18, expands outwards the flexible arms 15. Guide 10 of the main body 1 is provided with side cavities (not visible in the figures), in which teeth 16 of the flexible arms 15 can hook, so that when the latter are expanded outwards by expander

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17, slider 8 cannot slide in the same guide 10. Expander 17 is provided with a pin 19 crossing an opening 20 made in the middle of slider 8, so that it can be moved by a user with respect to slider 8. Hole 21 for pin 9 which mechanically connects slider 8 to the mobile plate 7 is made in the rear wall of slider 8. Two flexible arms 22 which are made in a single piece, for example of plastic, with the body of expander 17 are provided with teeth 23 protruding from the sides of the same expander for penetrating into corresponding cavities 24 made at the sides of guide 18 of slider 8, so that expander 17 can be partially locked in its extreme lower and/or upper positions. Figures 10 to 12 and 13 to 15 show slider 8 with the flexible arms 15 in a retracted and expanded position.

The thickness of striker 6 is preferably lower than 0,8 mm, while its width is comprised between 10 and 12 mm. The thickness of the mobile plate 7 is preferably lower than 0,5 mm, while its width is comprised between 9 and 12 mm. With these sizes, it is possible to employ metal staples 3, 13 having a thickness comprised between 0,7 and 1,3 mm, or nails 12, 14 having a width comprised between 0,9 and 2,1 mm.

Obviously, the above described adjusting mechanism can be applied to the staplers with the anvil for clinching the metal staples, as well as to the staplers lacking in this member, which are also known with the name *tacker*.

Further modifications and/or additions may be made by those skilled in the art to the hereinabove described and illustrated embodiments of the invention, while remaining within the scope of the same invention **claim 1**.

- 5 -

CLAIMS

1. Stapler comprising a main body (1) which includes a seat (2) for a row of staples (3, 13) and/or nails (12, 14) which are urged by a pusher (4) toward an ejection head (5), wherein a striker (6) can run in a direction substantially perpendicular to the feed direction of the row of staples (3, 13) and/or nails (12, 14) in the seat (2) for pushing and ejecting from the ejection head (5) the first staple (3, 13) and/or nail (12, 14) of the row, characterized in that a mobile plate (7) is being mechanically connected to a slider (8) which protrudes outside the main body (1), ~~so characterized in that by~~ moving the slider (8) the mobile plate (7) can slide in the main body (1) **from a rest position to an operative position** for being arranged between the ejection head (5) and the striker (6) when the latter pushes the first staple (3, 13) and/or nail (12, 14).

2. Stapler according to the previous claim, characterized in that the mobile plate (7) is mechanically connected to the slider (8) by means of a pin (9) housed in corresponding holes (21) made in the mobile plate (7) and in the slider (8).

3. Stapler according to one of the previous claims, characterized in that the mobile plate (7) can slide in a direction substantially parallel to the run direction of the striker (6).

4. Stapler according to one of the previous claims, characterized in that the main body (1) comprises two half-bodies (1a, 1b) which are mutually joined along a substantially vertical symmetry plane which crosses the striker (6) and the seat (2) for the staples (3, 13) and/or nails (12, 14), wherein the slider (8) can slide in a guide (10) made in the front wall of the half-bodies (1a, 1b).

5. Stapler according to ~~the previous claims 2 and 4~~, characterized in that the pin (9) connecting the mobile plate (7) to the slider (8) crosses an opening formed of two opposing notches made in the two half-bodies (1a, 1b) of the main body (1).

6. Stapler according to one of the previous claims, characterized in that the mobile plate (7) has a notch (11) along at least one side edge thereof, so that the width of the mobile plate (7) is smaller than the seat for the staples (3, 13) and/or nails (12, 14) in the ejection head (5).

7. Stapler according to one of the previous claims, characterized in that the

slider (8) comprises a locking mechanism which includes two flexible arms (15) which are made in a single piece with the body of the slider (8) and are provided with teeth (16) protruding from the sides of the same slider, as well as an expander (17) which can slide in a guide (18) made in the central body of the slider (8) in a vertical direction equal to the sliding direction of the slider (8) in the main body (1), so that the expander (17), during its sliding in the guide (18) of the slider (8), expands outwards the flexible arms (15).

8. Stapler according to the previous claim, characterized in that the guide (10) of the main body (1) is provided with side cavities, in which the teeth (16) of the flexible arms (15) can hook, so that when the latter are expanded outwards by the expander (17), the slider (8) cannot slide in the same guide (10).

9. Stapler according to claim 7 or 8, characterized in that the expander (17) is provided with a pin (19) crossing an opening (20) made in the middle of the slider (8), so that this pin (19) can be moved with respect to the slider (8).

10. Stapler according to one of claims 7 to 9, characterized in that two flexible arms (22) which are made in a single piece with the body of the expander (17) are provided with teeth (23) protruding from the sides of the same expander (17) for penetrating into corresponding cavities (24) made at the sides of the guide (18) of the slider (8), so that the expander (17) can be partially locked in its extreme lower and/or upper positions.

11. Stapler according to one of the previous claims, characterized in that the thickness of the striker (6) is lower than 0,8 mm, while its width is comprised between 10 and 12 mm.

12. Stapler according to one of the previous claims, characterized in that the thickness of the mobile plate (7) is lower than 0,5 mm, while its width is comprised between 9 and 12 mm.

ABSTRACT

Stapler comprising a main body (1) which includes a seat (2) for a row of staples (3, 13) and/or nails (12, 14) which are urged by a pusher (4) toward an ejection head (5),
5 wherein a striker (6) can run in a direction substantially perpendicular to the feed direction of the row of staples (3, 13) and/or nails (12, 14) in the seat (2) for pushing and ejecting from the ejection head (5) the first staple (3, 13) and/or nail (12, 14) of the row, wherein a mobile plate (7) is mechanically connected to a slider (8) which protrudes outside the main body (1) so that by moving the slider (8) the mobile plate (7)
10 can slide in the main body (1) for being arranged between the ejection head (5) and the striker (6) when the latter pushes the first staple (3, 13) and/or nail (12, 14).